



Ya. V. Honcharenko, N. O. Oleksiichenko, U. M. Sokolenko

O. M. Beketov National University of Urban Economy in Kharkiv, Kharkiv, Ukraine

LANDSCAPE ORGANIZATION OF THE THEME SQUARE "VYSHYVANKA DAY" IN CHERNIVTSI

Objects of the nature reserve fund, including parks-landscape art landmarks are the subject of protection. Besides scientific, they perform aesthetic, recreational, and educational functions. They are valuable not only as architectural ensembles but also for plants that have remained since the creation of the parks and have a centuries-old history. Such plants are entered into databases and their condition is monitored for a better understanding of the features of their development in modern microclimatic conditions. For research, a plant inventory is carried out, according to which the phytosanitary condition, quantitative, and species structure of plant elements of greened areas is assessed. Individual indicators must comply with the standards specified in the State Building Regulations. Phenological observations give an idea of the decorative features of plants throughout the year and the aesthetic condition of plants under certain environmental conditions. To know the relative age of woody plants, formulas consider the trunk circumference and the empirical coefficient of plants of each species. Analysis of scientific sources of information showed that the square was created in 1871. After the reconstruction in 2023, it has 19 locations, 17 of which involve plant compositions. The main compositional accent is the solitaire *Fagus sylvatica* L. in the central area of the landscape object, which symbolizes Bukovyna. This is the only location that corresponds to the thematic concept of the square. According to the results of a comparative analysis of the species structure of woody plants, it was found that the removal of *Robinia pseudoacacia* L. and *Hibiscus syriacus* L. plants led to a decrease in the number of plants with decorative flowering, and *Cotoneaster horizontalis* Decne. with decorative fruiting. The removal of *Buxus sempervirens* L. is natural for Chernivtsi, as a large part of it is affected by *Cydalima perspectalis* Walker. To improve the artistic and decorative design of the territory of the square during the reconstruction, the addition of *Fagus sylvatica* L. 'Purpurea', *Fagus sylvatica* 'Purpurea Pendula' plants was carried out. *Acer palmatum* Thunb. and *Paulownia tomentosa* Steud. with decorative leaves. To improve the artistic and decorative design of the territory of the square during the reconstruction, the addition of *Fagus sylvatica* L. 'Purpurea', *Fagus sylvatica* 'Purpurea Pendula', *Acer palmatum* Thunb and *Paulownia tomentosa* Steud. with decorative leaves was carried out. As a result of the research, plant species approaching the age limit and requiring more careful care, conservation, and protection measures were identified. The obtained results will be useful for further monitoring and making proposals for improving the landscape organization of the square following its thematic concept and the norms defined by law for individual components of the space of similar objects.

Keywords: landscaping; century-old trees; parks-landscape art landmarks; inventory; theme parks and gardens.

Introduction / Вступ

Parks-monuments of horticultural art belong to the cultural heritage, are protected by legislation, and represent the most valuable examples of landscapes. In this regard they perform versatile ecosystem services, being dynamic living systems that require constant monitoring and proper care. In addition, it is worth noting that global climate changes significantly affect the condition and development of woody plants, and this must be considered when updating and selecting the assortment.

Relevance of research. For Ukraine, restoration of ancient facilities damaged during the war in 2022-2024 is becoming urgent. They need special attention during reconstruction to preserve valuable plant groups, a certain style, and landscape object authenticity. The study of most of the

parks-monuments of horticultural art is sufficiently covered in the works of domestic scientists [8, 12, 16, 18, 23]. However, the century-old trees, which often grow on the objects of the nature reserve fund, including parks and horticultural art monuments, remain not fully studied. So far, more attention is paid to trees aging more than 300 years [8, 20]. However, for plants to reach it, they need care and monitoring. Currently, this is missing and it is necessary to initiate such work and prioritize the sustainability of valuable landscapes, which will give them uniqueness and demonstrate the connection between the past, the present, and the future.

Object of research – square "Vyshyvanka Day (embroidered shirt day)" in Chernivtsi.

Subject of research – methods and means of establishing the landscape organization of the "Vyshyvanka Day"

Інформація про авторів:

Гончаренко Яніна Вікторівна, канд. біол. наук, доцент, кафедра ландшафтного проєктування та садово-паркового мистецтва.

Email: Yanina.Honcharenko@kname.edu.ua; <https://orcid.org/0000-0002-4526-4873>

Олексійченко Надія Олександрівна, д-р с.-г. наук, професор, кафедра ландшафтного проєктування та садово-паркового мистецтва. Email: nadiia.oleksiichenko@kname.edu.ua; <https://orcid.org/0000-0003-0499-5992>

Соколенко Уляна Михайлівна, канд. біол. наук, доцент, кафедра ландшафтного проєктування та садово-паркового мистецтва. Email: uliana.sokolenko@kname.edu.ua; <https://orcid.org/0000-0001-8527-3929>

Цитування за ДСТУ: Гончаренко Я. В., Олексійченко Н. О., Соколенко У. М. Ландшафтна організація тематичного скверу "Дня вишиванки" у Чернівцях. Науковий вісник НЛТУ України. 2024, т. 34, № 6. С. 19–25.

Citation APA: Honcharenko, Ya. V., Oleksiichenko, N. O., & Sokolenko, U. M. (2024). Landscape organization of the theme square "Vyshyvanka day" in Chernivtsi. *Scientific Bulletin of UNFU*, 34(6), 19–25. <https://doi.org/10.36930/40340603>

park, which makes it possible to carry out retrospective analysis of the taxonomic composition of tree plantings and their inventory, identification of ecological groups of plants and assessment of their health condition, identification of old trees, proposals for improving the landscape organization of the territory of the park.

The purpose of the research – to determine and analyze the taxonomic composition of tree plantings and landscaping elements of the square based on its inventory, which will make it possible to replenish the assortment with such plants that reveal national traditions and are symbolic of Ukraine.

To achieve this *purpose*, the following main *research objectives are identified*:

1. To carry out a retrospective analysis of the taxonomic composition of tree plantings of the square and to determine the main directions of changes, making it possible to track trends in its landscaping.
2. Based on the analyses of the plant origin, establish their compliance with the ideal load of the square, to select an authentic assortment of plants.
3. Based on the inventory, determine ecological groups of woody plants, analyze their biological features, and damage by diseases and phytophages, which will ensure rational planning of plant care measures to maintain proper health condition and their decorative appearance.
4. Identify century-old and other trees that need preservation and protection, to improve their vitality, and include the most valuable ones in the register of cultural heritage objects of Ukraine.
5. To propose measures to improve the landscape organization of the square, territory to reveal the thematic idea, and increase the aesthetics of compositional groups, which will contribute to ensuring the national color of individual locations and fostering the patriotism of potential visitors.

Analysis of recent research and publications. The issues of greening and preserving valuable territories have become particularly relevant in Ukraine in the last few years. Each region has unique parks sights gardens and park art of different categories. The implementation of recovery measures, including reconstruction is urgent for them.

Ukrainian scientists N. O. Oleksiichenko and S. M. Pidkhovna [18] showed the scientific, aesthetic, health, and educational significance of parks-monuments of garden and park art of the Ternopil region. They also proposed measures for the reconstruction and conservation of individual objects which contribute to the popularization and investment attraction to recreation development. A. S. Malinovska and I. M. Romanyuk studied the parks-monuments of horticultural art in the Vinnytsia region [16]. They conclude that these parks are part of cultural monuments and should be considered important tourist sites. It has now been stated that some historical objects have been destroyed and will require renovation.

Zohreh H. and Caneva G. [24] conclude that it is important to recognize the value of such objects, not to waste them, and to save them for future generations. Therefore, when carrying out restoration and reconstruction efforts, it is necessary to consider various aspects, one of the main ones being the importance of creating an atmosphere to ensure the historical authenticity of the territory. The studies of M. Olivadese and M. L. Dindo [19] also reinforce the importance of preserving cultural heritage objects. Historical gardens and parks show the history of the development of society, its culture, and its understanding of aesthetics. They provide ecosystem services and require attention and

observation in the minds of anthropocultural and climatic knowledge. According to researchers, the restoration must guarantee the object's authenticity. Research on parks in China [22] demonstrates the importance of considering cultural ecosystem services. The authors emphasize the importance of studying historical, aesthetic, and recreational features related to human well-being. Such benefits should be taken into account for better management of natural resources.

Italian researchers [5] propose to analyze the landscape dynamics and select the plant assortment for parks with centuries-old history. They analyzed the current threats to old parks and gardens. To counteract the interconnected biotic and abiotic factors and the evolution of the landscape, they propose to search for compromises between reconstruction and the usage of new elements. Initially, they suggest updating the plant assortment, which should be sustainable and subordinate to the general style.

In the example of Lombardy, A. Cazzani and colleagues [6] showed the importance of creating web applications for ancient parks and gardens to reveal their historical and scientific value. This allows heritage sites to be presented to the general public.

When researching ancient objects, special attention is paid to century-aged and veteran trees, such specimens are searched, and documented in the reference literature and a public electronic database. A register directory of century-aged trees has been created in Ukraine [7]. O. M. Romanuk and V. V. Romanyuk [20] carried out a complex analysis of century-aged trees in the street plantings of Chernivtsi. They determined the systematic, age, and taxonomic structure for 114 century-aged trees. As it was found, these plants are represented by 28 species from Pinophyta and Magnoliophyta. Specimens aged from 100 to 200 years prevail.

Special methods are needed for researching parks-monuments of horticultural art. A group of scientists [10] developed the Patchwork quilt technique considering the data from social, spatial, and historical contexts that provide insight into the evolution of the landscape. Thus, when researching territories valuable for recreation, it is necessary to know the historical data of the site development, the presence of century-aged trees, and the correspondence of the constituent elements of the landscape to the thematic design.

Materials and methods of research. The research program envisages a retrospective analysis of tree plantings of the square in the context of its reconstruction and an inventory by current instructions [13]. The authors conducted the first inventory and photo-fixation in 2022, and the last in 2024. Landscape reconstruction on the territory of the square was carried out in 2023.

The types and number of woody plants were determined by the route-visual method, the state of road and path paving, garden and park equipment, and small architectural forms were analyzed and their number was compared following the requirements [9, 21]. Based on the results of the inventory and literary sources, a comparison of the existing plant assortment with historical data was made [12, 23].

Thanks to phenological observations, groups of decorative plants, and their certain biological and ecological features, damage by phytophages and diseases was recognized. The approximate age of individual trees was determined according to the accepted method [7]. The landscaping elements and plants' origin were analyzed following the conceptual design of the square "Vyshyvanka Day".

Research results and their discussion / Результати дослідження та їх обговорення

The information analysis about the "Vyshyvanka Day" square in Chernivtsi showed its long history dating back to 1871 [8, 12, 23]. It got its modern name as a result of reconstruction in 2023. To this day, it is "Park Square on Soborna" with the status of a park monument of garden and park art of local importance. The square has a trapezoidal shape (Fig. 1,a), and occupies an area of 0.75 hectares, which is divided into 19 locations: a children's playground, a glade with a lawn, and 17 plant groups. There is also a newsstand.

The dominant part of the square is the central part, which contains a light element in the form of a ribbon with a carved ornament of Bukovyna embroidery, limited by three benches surrounding *Fagus sylvatica* L. in the form of a solitaire (Fig. 1,b).

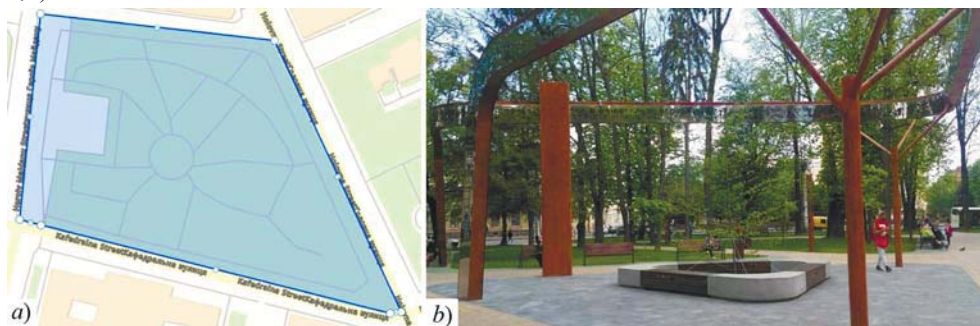


Figure 1. "Vyshyvanka Day" square / Сквер "Дня Вишиванки": a) the location on the city map / територія на мапі міста; b) the central part / центральна частина

The inventory of the square in 2024 showed that the clade *Gymnospermae* includes plants from 3 families and 7 genera (Fig. 2). The *Cupressaceae* family includes *Juniperus sabina* L. (19 individuals), *Metasequoia glyptostroboides* Hu and W. C. Cheng), *Thuja occidentalis* L. (3 individuals), *Th. occidentalis* 'Pyramidalis' (3 individuals). *Ginkgoaceae* includes a single specimen of *Ginkgo biloba*. *Pinaceae* are represented by *Picea abies* (L.) H. Karst. (2 individuals), *P. pungens* Engelm. (3 individuals), *Pinus sylvestris* L., *P. ponderosa* Douglas ex C. Lawson (2 individuals), *Tsuga canadensis* (L.) Carrière (6 individuals).

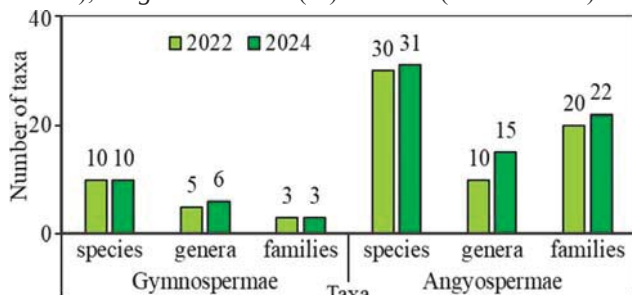


Figure 2. Comparison of the taxonomic composition of woody plants during 2022-2024 / Порівняння таксономічного складу деревних рослин упродовж 2022-2024 рр.

Angiospermae is the largest clade and includes 13 families and 20 genera. *Berberis thunbergii* DC belongs to *Berberidaceae*. 'Erecta' (9 individuals), *Berberis thunbergii* 'Atropurpurea' (7 individuals), *Berberis aquifolium* Pursh (2 individuals). *Betulaceae* is represented by *Betula pendula* Roth. (5 individuals), *Carpinus betulus* L. (3 individuals). *Fagaceae* includes *Fagus sylvatica* L. (3 individuals), *F. sylvatica* 'Purpurea' (2 individuals), *F. sylvatica* 'Purpurea Pendula', *Quercus robur* L. (3 individuals). *Oleaceae* include *Forsythia europaea* Degen & Bald. (7 individuals), *Fraxinus excelsior* L. (16 individuals), *Fraxinus excelsior* 'Pendula' (1 individual), *Syringa vulgaris* L. (5 individuals).

Among the elements of landscaping, there are the following: a bicycle path; bicycle parking equipment; paths made of slabs and gravel; lamps; bins for various purposes (for garbage, for garbage sorting; for animal waste); benches; plants as a component of landscaping.

The arrangement of lighting deserves special attention. Location involving *Ginkgo biloba* L., *Crataegus laevigata* (Poir.) DC. 'Paul's Scarlet' and *Prunus avium* (L.) L. has 10 ground lamps that illuminate the plants very effectively at dusk. Tall lamps in the amount corresponding to the regions of Ukraine are placed along the tracks. They contain the region name, the pattern of its embroidery, and information about ornament patterns. The square has 48 wooden benches along the alleys and 7 metal benches (3 near the lawn, 4 along the light element). Thus, the square has a multifunctional purpose. It is used as an exhibition, entertainment, children's game, informational, walking, etc.

Such representatives as *Crataegus arnoldiana* Sarg., *Crataegus laevigata* 'Paul's Scarlet' (9 individuals), *Prunus avium* (L.) L., *Spiraea × vanhouttei* (Briot) Zabel (2 individuals) belong to the *Rosaceae* family. One of the most numerous is the *Sapindaceae* family with the following species: *Acer campestre* L., *A. negundo* L., *A. palmatum* Thunb., *A. platanoides* L. (26 individuals), *A. pseudoplatanus* L. (3 individuals), *Aesculus hippocastanum* L. (9 individuals), *A. hippocastanum* 'Baumannii'. Single species represented by the following families: *Cornaceae* (*Cornus sanguinea* L.); *Fabaceae* (*Gymnocladus dioica* (L.) K. Koch); *Hydrangeaceae* (*Philadelphus coronarius* L. – 10 individuals); *Malvaceae* (*Tilia cordata* Mill. – 14 individuals); *Paulowniaceae* (*Paulownia tomentosa* Steud.); *Platanaceae* (*Platanus × acerifolia* (Aiton) Willd. 'Alphen's Globe' – 5 individuals); *Simaroubaceae* (*Ailanthus altissima* (Mill.) Swingle).

There are 116 trees and 77 bushes in the square. Overall, *Gymnospermae* is represented by 25 individuals of shrubs and 16 trees, and *Angiospermae* includes 52 shrubs and 100 trees. The vast majority of plants were used in group plantings. *Fraxinus excelsior* and *Tilia cordata* were used for alleys. Row plantations were created with the participation of *Aesculus hippocastanum*, *Platanus × acerifolia* 'Alphen's Globe', *Thuja occidentalis* 'Pyramidalis', solitaires – *Acer palmatum*, *Fagus sylvatica* (Fig. 1,b).

The plants are represented by several ecological groups and are distributed as follows: 56 % – heliophytes, 44 % – facultative heliophytes, 71 % – mesophytes, 29 % – xerophytes. The vast majority of plants grow in groups and suppress each other, which leads to the deterioration of health and decorativeness. During prolonged heat, plant leaves lose turgor, have edge necrosis, premature yellowing, and leaf fall.

Improper growing conditions for plants contribute to damage by diseases and phytophages (Fig. 3). All individuals of *Fraxinus excelsior* show signs of damage by *Prociphilus fraxinifolii* Riley. *Aesculus hippocastanum* shows signs of damage by rust and *Cameraria ohridella* Deschka & Dimic. *Oxycareus lavaterae* Fabricius was recorded on some trees of *Tilia cordata*. Individuals of *Aesculus hippocastanum*

and, to a greater extent, *Acer platanoides* are inhabited by *Viscum album* L. A frost crack was recorded on one individual of *Fraxinus excelsior*. *Berberis thunbergii* leaves are affected by powdery mildew. Trees whose age is approaching the upper limit and older have thinning of the crown and about 15-20 % of dried branches. All these signs worsen the decorative appearance and attractiveness of plants.



Figure 3. Plant damage / Пошкодження рослин: a) *Oxycareus lavaterae* Fabricius; b) *Prociphilus fraxinifolii* Riley; c) *Cameraria ohridella* Deschka & Dimic

According to the results of phenological observations, plants from different groups of decorativeness were found, which increases their value in the compositions and general perception of the square (Fig. 4,a,b). Fourteen species and decorative forms of plants have decorative flowering. It starts in March (*Forsythia europaea*) and lasts until the beginning of July (*Tilia cordata*). According to sexual distribution, the dioecious plants represented exclusively by "male" specimens (*Ginkgo biloba*, *Ailanthus altissima*, *Acer negundo*, *Gymnocladus dioica*) were recorded. *Juniperus sabina* has individuals of both sexes.

There are 7 monoecious plants with physiologically unisexual flowers. The rest of the plants (21 species and decorative forms) are monoecious with bisexual flowers. Decorative fertility is related to the previous sign, because "male" individuals do not produce fruits, and eight species of plants belong to this group. Representatives of *Crataegus* and *Berberis* have the most decorative red and blue fruits.

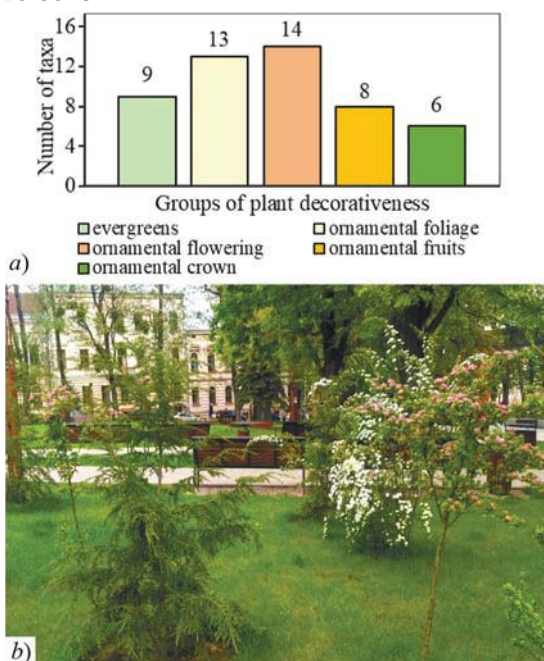


Figure 4. Groups of plant decorativeness / Групи декоративності рослин: a) distribution by groups of decorativeness / розподіл за групами декоративності; b) an example of a location / приклад локації

Evergreen plants (9 species and decorative forms) are valuable because they make composite groups attractive in winter. When grouping plants with decorative leaves, those with large leaf plates or colored coloring were included, and 13 species and decorative forms were found. *Acer palmatum*, *Berberis thunbergii* 'Erecta', *Fagus sylvatica* 'Purpurea Pendula', *Fraxinus excelsior* 'Pendula', *Platanus × acerifolia* 'Alphen's Globe' have a decorative crown, which in winter is an additional decorative factor of plant groups.

The origin of woody plants was analyzed in connection with the fact that this square is dedicated to a Ukrainian holiday (Vyshyvanka Day). Of the available assortment, only 37 % are autochthonous, the rest are represented by introducers from North America, Asian countries, etc.

Special attention should be paid to the century-old trees, thanks to which the former "Park Square on Sobornia" received the status of a park monument of garden and park art of local importance (Table 1). The age of 20 woody plants from 9 species exceeds 100 years (Fig. 5,a).

Table 1. Characteristics of century-old trees / Характеристика вікових рослин

Taxa	Number of specimens	Trunk circumference, cm (minimum-maximum)	Age, years (minimum-maximum)
<i>Acer platanoides</i>	1	221	125
<i>A. pseudoplatanus</i>	1	214	107
<i>Aesculus hippocastanum</i>	5	112-241	106-121
<i>Aesculus hippocastanum</i> 'Baumannii'	1	430	215
<i>Carpinus betulus</i>	3	203-122	203-122
<i>Ginkgo biloba</i>	1	357	179
<i>Prunus avium</i>	1	240	130
<i>Tilia cordata</i>	6	157-271	173-298
<i>Quercus robur</i>	1	233	233

Data analysis (Table 1) shows that, according to the relative age of trees, the oldest plants are *Tilia cordata* (some of which reach the mark of almost 300 years), and *Quercus robur* and *Aesculus hippocastanum* 'Baumannii', the age of which can exceed 200 years (Fig. 5,b). The following are included in the IUCN lists: endangered – *Ginkgo biloba* (Fig. 5,c), *Metasequoia glyptostroboides*; vulnerable – *Gymnocladus dioica*.

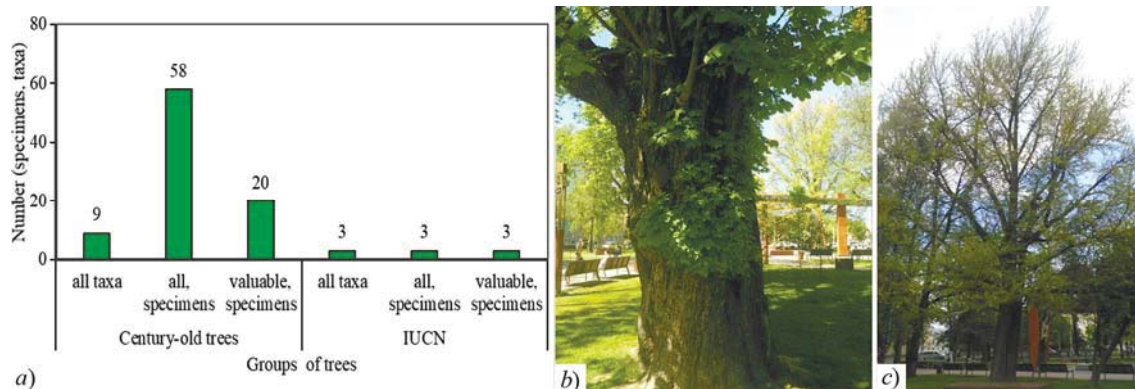


Figure 5. Valuable trees of the square / Цінні дерева скверу: a) distribution of plants by categories / розподіл рослин за категоріями; b) *Aesculus hippocastanum* 'Baumannii'; c) *Ginkgo biloba*

Discussion of research results. Monitoring of landscaping objects allows timely identification of problems and response to them. This especially applies to parks-monuments of various categories. Researchers in urban planning [15] emphasize the preservation, conservation, reconstruction, and further development of such objects. For this purpose, the algorithm is suggested. It includes the study characteristics of the object by cartographic data, assessment degree of its preservation, and delineation of the object's development potential using landscape design. This helps to incorporate modern elements to attract visitors without destroying the overall image of the park.

Of course, the parks must be attractive due to various elements, and today considerable attention is paid to authenticity. It can be related to a certain topic attracting visitors with certain preferences. Generally, theme parks are paradigmatic and representative examples of emotional spaces [3]. In his research, C. Baker showed the importance of 77 leading theme parks in North America, Asia, and Europe as economic and cultural phenomena. To identify the features of theme parks, evaluating the thematic content is suggested using direct or indirect narrative components. Regional variations based on the cultural context and influencing society are also important. The relationship between the spatial design of the theme park and visitors' emotions from the point of view of symbolic interactionism, is shown in the studies of E. Cabanas [4]. In his opinion, the emotional atmosphere created by plants and equipment should be the basis for thematic design. E. Athanasiadou [1], based on the experience of Greece, regarding the recognition, preservation, restoration, and management of heritage sites, notes that it is necessary to study the current state of each park because it is not always appropriate to carry out this or that restoration measure. Sometimes the modernization of certain elements of the territory helps to increase the popularity of the object.

From this point of view, thanks to the reconstruction, the "Vyshyvanka Day" square is popular with the city's residents. A lighting element with a carved ornament of Bukovyna embroidery, and lamps with embroidery patterns of regions of Ukraine look very original. The presence of *Fagus sylvatica* as a symbol of Bukovyna adds historicity and reveals the belonging of this territory. The predominance of introduced plants contradicts the ideal loading of the square, which should be considered during further reconstruction activities.

It is recognized that the inventory and monitoring of green spaces contribute to the best selection of the plants'

assortment. M. Esperon-Rodriguez, D. Quintans, and P. D. Rymer [11] covered several Australian cities by research. They showed the importance of monitoring the state of plants under certain climatic and microclimatic conditions to assess the success of their cultivation. Based on the received data, it became possible to form the optimal assortment for each landscaping object.

Information on the changes in the plant assortment during the existence of this territory is insufficient. The atlas reference [8] and research by A. I. Tokaryuk and O. M. Romanyuk [23] contain incomplete information about the assortment of woody plants. The authors indicate the presence of species that were not recorded in 2022: *Platycladus orientalis* (L.) Franco., *Pinus nigra* Arnold, *Berberis thunbergii* DC., *Philadelphus inodorus* L., *Forsythia suspensa* (Thunb.) Vahl, *Cerasus japonica* (Thunb.) Loisel., *Deutzia scabra* Thunb., *Phellodendron amurense* Rupr., *Acer saccharinum* L. and *Ulmus laevis* Pall.

As a result of the reconstruction in 2023, *Juniperus communis* 'Sentinel', *Buxus sempervirens* L., *Robinia pseudoacacia* L., *Hibiscus syriacus* L., *Cotoneaster horizontalis* Decne were removed. *Tsuga canadensis*, *Acer palmatum*, *Fagus sylvatica* 'Purpurea', *F. sylvatica* 'Purpurea Pendula', *Paulownia tomentosa*, *Platanus × acerifolia* 'Alphen's Globe' were added instead of removed trees.

The renaming of this area from a park square to a square is appropriate from a regulatory point of view, as it occupies an area of 0.75 hectares [9, 21]. However, the number and ratio of life forms of plants do not correspond to those indicated for public squares [9]. Today, there are 77 specimens of bushes and 116 trees against the required 837 and 195, respectively. It is worth paying attention to the inconsistency of the ecological conditions for the growth of some ornamental plants in group plantings. The location of purple-leaved forms in the shade worsens their colour and negatively affects their aesthetic appearance and health condition. Old trees need proper care and preservation measures, which will improve the growing conditions and promote their preservation. It is advisable to install information boards near valuable tree plants to avoid their damage during various promotions, festivals, and other events on the territory of the square.

The successful experience of Great Britain [17] shows the importance of environmental education of the population and the creation of the Ancient Tree Inventory electronic database, which provides an idea of the number and condition of genetically valuable trees. This database is the basis for monitoring and justifying measures for the protection of individual territories. P. Jin and Y. Liu [14] with their rese-

arch also reveal the importance of applying modern technologies, especially for heritage sites. Using the example of the "WeChat Virtual Tour of the Great Wall" program, they demonstrate the transformation of statics into dynamics. Today, many historical objects have been destroyed at the territory of Ukraine, needing protection, preservation, and restoration. Therefore, this kind of activity can be considered extremely necessary.

The study of Shanghai Disney Resort during 2016-2022 [2] showed that the arrangement of the theme park, which is directly related to the restoration of elements that reveal its ideological load, contributes to the comfort of vacationers and is of great importance in attracting visitors.

The visitors actively use children's playgrounds throughout the growing season. Bike lanes and bike parking facilities also play a positive role in attracting visitors. Updated benches, urns, and lighting elements give a more modern look to the territory of the square. Only the following elements, which should be according to the requirements [9], are missing: information on the location of the main facilities (including public toilets), public toilets with a universal cabin for people with disabilities and a place to place a changing table.

The research aimed to draw attention to the problems of rational reconstruction of landscaping objects and valuable plant preservation.

So, based on the results of the work performed, it is possible to formulate the following scientific novelty and practical significance of the research results.

The scientific novelty of the obtained research results – that for the first time, inventory research was carried out on the territory of "Vyshyvanka Day" square, the taxonomic composition of woody plants was determined, their biological and ecological features were analyzed, old trees that needed preservation and protection were identified.

Practical significance of the research results – the measures based on the received data, will contribute to the improvement of landscape organization of the square territory and emphasize its ideological load. The results of the plant inventory are a guideline for further monitoring, the development of a measure plan for the care of plantations, and use in the next stages of the restoration of the landscaping object.

Conclusions / Висновки

For the first time, an inventory of the "Vyshyvanka Day" square in Chernivtsi was carried out and the landscaping elements were investigated. The main conclusions can be drawn based on the research results.

1. Previous studies by other authors contain incomplete information about the species range of woody plants, the presence of century-aged trees, and landscaping elements, which does not make it possible to do a qualitative retrospective analysis of the landscape organization of the square territory.
2. It was found that the woody plants of the clade *Gymnospermae* are represented by 9 species, 7 genera, and 3 families, and *Angiospermae* includes 22 species, 2 varieties, 2 hybrids, 5 decorative forms from 21 genera, and 13 families. The plants were used mainly in group plantings and much less in rows, alleys, and solitaires. The total number of trees is 116 specimens, and bushes are 77, which is insufficient for a square area and does not meet the requirements for the level of greening of the landscaping object. In terms of decorativeness, plants with decorative flowering and decorative leaves prevail.

3. The growth of some plant species in inappropriate microclimatic conditions leads to a loss of decorativeness and damage by phytophages and diseases.
4. The available assortment of trees and shrubs, with a predominance of introduced plants, does not correspond to the thematic idea of the square territory, which is connected with the Ukrainian holiday – the "Vyshyvanka Day" (embroidered shirt day). The assortment of the square must be enriched with plants that reveal the national traditions of the region and are symbolic of Ukraine. Century-old and included in the IUCN lists plants require careful care and protection.

Acknowledgment. The authors are sincerely grateful to the editorial board for valuable comments and suggestions that improved the quality of the article.

References

1. Athanasiadou, E. (2019). Historic Gardens and Parks Worldwide and in Greece: Principles of Acknowledgement, Conservation, Restoration and Management. *Heritage*, 2(4), 2678–2690. <https://doi.org/10.3390/heritage2040165>
2. Bai, S., He, H., Han, C., Yang, M., Yu, D., Bi, X., Gupta, B. B., Fan, W., & Panigrahi, P. K. (2023). Exploring thematic influences on theme park visitors' satisfaction: An empirical study on Disneyland China. *Journal of Consumer Behaviour*, 1–17. <https://doi.org/10.1002/cb.2157>
3. Baker, C. (2023). The prevalence of storyworlds and thematic landscapes in global theme parks. *Annals of Tourism Research Empirical Insights*, 4(1). <https://doi.org/10.1016/j.annale.2022.100080>
4. Cabanas, E. (2020). Experiencing designs and designing experiences: Emotions and theme parks from a symbolic interactionist perspective. *Journal of Destination Marketing & Management*, 16. <https://doi.org/10.1016/j.jdmm.2018.12.004>
5. Carrari, E., Aglietti, C., Bellandi, A., Dibari, C., Ferrini, F., Finneschi, S., Galeotti, P., Giuntoli, A., Manganelli Del Fa, R., Moriondo, M., Mozzo, M., Padovan, G., Riminesi, C., Selvi, F., & Bindi, M. (2022). The management of plants and their impact on monuments in historic gardens: Current threats and solutions. *Urban Forestry & Urban Greening*, 76. <https://doi.org/10.1016/j.ufug.2022.127727>
6. Cazzani, A., Zerbi, C. M., Brumana, R., et al. (2022). Raising awareness of the cultural, architectural, and perceptive values of historic gardens and related landscapes: panoramic cones and multi-temporal data. *Appl Geomat*, 14(1), 97–130. <https://doi.org/10.1007/s12518-020-00330-7>
7. Century-aged trees of Ukraine: register-handbook. (2010). State Service of Protected Affairs of the Ministry of Natural Resources of Ukraine, Kyiv Ecological and Cultural Center. Kyiv: Logos, 143. [In Ukrainian] URL: <https://pryroda.in.ua/lystopad/starodavni-dereva-ukrainy-reiestr-dovidnyk/>
8. Chorney, I. I. (Ed.). (2017). Protected areas of Bukovyna: An atlas and handbook. Chernivtsi: Druk Art., 256. [In Ukrainian] URL: <https://dokumen.pub/9786177465286.html>
9. DBN B.2.2-5:2011 Territorial development (with amendments) Acts from September 1, 2012. Change No. 1 acts from 01.10.2018. Valid from 01-01-2012. Kyiv: Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine, 2012 – Constantly updated. [In Ukrainian]. URL: https://dbn.co.ua/load/normativy/dbn/dbn_b_2_2_5_2011/1-1-0-1033, (access date: 05/20/2024)
10. Duarte de Oliveira, P. P., Sousa, R. de B., & Alves, S. F. N. da S. C. (2021). Patchwork quilt: A methodology proposed for the study of historic gardens. *Urban Forestry & Urban Greening*, 62. <https://doi.org/10.1016/j.ufug.2021.127169>
11. Esperon-Rodriguez, M., Quintans, D., & Rymer P. D. (2023). Urban tree inventories as a tool to assess tree growth and failure: The case for Australian cities. *Landscape and Urban Planning*, 233. <https://doi.org/10.1016/j.landurbplan.2023.104705>
12. Honcharenko, Y., & Oleksiichenko, N. (2024). Dendroflora of the square "Vyshyvanka Day" in Chernivtsi. Actual problems of

- inhabited places greening: education, science, the art of landscape formation: materials of International science and practice conference, (Ternopil, June 06-07, 2024). Ternopil: TOKIPPO center 92–94. [In Ukrainian]. URL: <http://clar.ippo.edu.te.ua:8080/handle/123456789/6553>
13. Instructions on the inventory of green spaces in populated areas of Ukraine. State Committee of Construction, Architecture and Housing Policy of Ukraine. Valid from 12-24-2001. Verkhovna Rada of Ukraine. Legislation of Ukraine: website. Electron. text. data. Kyiv, 2001 – Constantly updated. [In Ukrainian]. URL: <https://zakon.rada.gov.ua/rada/show/v0386667-06#Text>. Title from the screen
 14. Jin, P., & Liu, Y. (2022). Fluid space: Digitisation of cultural heritage and its media dissemination. *Telematics and Informatics Reports*, 8. <https://doi.org/10.1016/j.teler.2022.100022>
 15. Lian, J., Nijhuis, S., Bracken, G., Wu, X., Wu, X., & Chen, D. (2024). Conservation and development of the historic garden in a landscape context: A systematic literature review. *Landscape and Urban Planning*, 246. <https://doi.org/10.1016/j.landurbplan.2024.105027>
 16. Malinovska, A. S., & Romaniuk, I. M. (2024). Parks monuments of landscape art in Vinnytsia region as objects of historical and cultural tourism. *Scientific Notes of Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University. Series: History*, 48, 83–89. <https://doi.org/10.31652/2411-2143-2024-48-83-89>
 17. Nolan, V., Reader, T., Gilbert, F., & Atkinson, N. (2020). The Ancient Tree Inventory: a summary of the results of a 15 year citizen science project recording ancient, veteran and notable trees across the UK. *Biodiversity and Conservation*, 29(2), 3103–3129. <https://doi.org/10.1007/s10531-020-02033-2>
 18. Oleksiichenko, N. O., & Pidkhovna, S. M. (2019). Retrospective analysis of the park monuments of the landscape architecture of Ternopil region. *Scientific Bulletin of UNFU*, 29(5), 17–21. <https://doi.org/10.15421/40290503>
 19. Olivadese, M., & Dindo, M. L. (2022). Historic and Contemporary Gardens: A Humanistic Approach to Evaluate Their Role in Enhancing Cultural, Natural and Social Heritage. *Land*, 11(12). <https://doi.org/10.3390/land11122214>
 20. Romanyuk, O. M., & Romaniuk, V. V. (2022). Complex analysis of systematic, age, and inventory structure of age-old trees of Chernivtsi. *Scientific Bulletin of Chernivtsi University. Biology (Biological systems)*, 14(2), 188–192. <https://doi.org/10.31861/biosystems2022.02.188>
 21. Rules for maintaining green spaces in populated areas of Ukraine. [In Ukrainian]. URL: <https://zakon.rada.gov.ua/laws/show/z0880-06#Text>
 22. Tian, T., Dong, Q., Zeng, P., Liu, Y., Yu, T., & Che, Y. (2023). How to accurately assess cultural ecosystem services by spatial value transfer? An answer based on the analysis of urban parks. *Urban Forestry & Urban Greening*, 82, article ID 127875. <https://doi.org/10.1016/j.ufug.2023.127875>
 23. Tokaryuk, A. I., & Romanyuk, O. M. (2020). Floristic diversity of the park-monument of landscape art of local value "Park-square" (Chernivtsi, Soborna square). *Scientific Bulletin of Chernivtsi University. Biology (Biological systems)*, 12(2), 52–56. <https://doi.org/10.31861/biosystems2020.02.279>
 24. Zohreh, H., & Caneva, G. (2022). Lost Gardens: From Knowledge to Revitalization and Cultural Valorization of Natural Elements. *Sustainability*, 14(5). <https://doi.org/10.3390/su14052956>

Я. В. Гончаренко, Н. О. Олексійченко, У. М. Соколенко

Харківський національний університет міського господарства ім. О. М. Бекетова, м. Харків, Україна

ЛАНДШАФТНА ОРГАНІЗАЦІЯ ТЕМАТИЧНОГО СКВЕРУ "ДНЯ ВИШИВАНКИ" У ЧЕРНІВЦЯХ

Здійснено інвентаризаційні дослідження рослин на території скверу "Дня Вишиванки" у Чернівцях після його реконструкції. Установлено невідповідність показників щодо кількісної структури дерев і кущів в озелененні визначеним нормативам. Виявлено рослини із клад *Gymnospermae* й *Angiospermae*, які представлені 31 видом, 2 сортами, 2 гібридами, 5 декоративними формами із 28 родів і 16 родин. Фенологічні спостереження показали приналежність рослин до 5 груп декоративності. До рослин ранньо-весняного квітання віднесено особини *Forsythia europaea* Degen & Bald. із найдекоративнішим виглядом упродовж березня-квітня. Завдяки 9 вічнозеленим представникам клад *Gymnospermae* й *Angiospermae* окремі локації мають привабливий вигляд і взимку. Встановлено переважання інтродукованих деревних рослин над автохтонами, що не відповідає тематичній концепції, пов'язаній із назвою скверу. Оцінено фітосанітарний стан рослин і виявлено наявність візуальних ушкоджень за участю *Prociophilus fraxinifolii* Riley., *Cameraria ohridella* Deschka & Dimic, *Oxycarenus lavatellae* Fabricius, *Viscum album* L. тощо. Виявлено вікові екземпляри дерев, серед яких найбільш давніми є *Tilia cordata*, *Aesculus hippocastanum* L., *A. hippocastanum* 'Baumannii', *Quercus robur* L., *Carpinus betulus* L., *Ginkgo biloba* L., які потребують належного догляду та консервативних заходів задля їх збереження через наявність у кронах близько 15–20 % засохлих гілок, механічних пошкоджень стовбурів тощо. Результатом проведеної реконструкції є оновлення окремих елементів благоустрою у вигляді більш сучасних унікальних елементів освітлення із вирізьбленою вишивкою кожної області України та установленні QR-коду, за яким можна дізнатися інформацію про особливості кожного орнаменту. Під час аналізу функціонального зонування території скверу виявлено недоступність дитячого майданчика взимку, що певною мірою зменшує його значущість і привабливість скверу в цю пору року.

Ключові слова: озеленення; вікові дерева; парки-пам'ятки садово-паркового мистецтва; інвентаризація; тематичні парки і сади.